Outline

• Introductory overview of EPPI-Reviewer
• Integration with Archie and Revman
• More efficient screening using text mining & machine learning
• Quality assessment / data extraction in complex / qualitative reviews
• Advanced meta-analysis
A (very) quick overview of EPPI-Reviewer
EPPI-Reviewer: web-based review management tool

Searching and screening

Bibliographic information

Characterising studies

Organises and applies substantive codes (keywording)

Data extraction and quality/relevance assessment

Substantive codes and textual detail (data extraction)

Numerical synthesis

Meta-analysis function

Narrative ‘empirical’ synthesis

Interrogation of codes and detail

Thematic/conceptual synthesis

Inductive coding function

• Web-based browsing and interrogation of coding within and across reviews, and review reports and summaries
• Online since 2000
EPPI-Reviewer: How it Works

http://eppi.ioe.ac.uk/eppireviewer4/

1. Silverlight Web Application
2. Runs on the Desktop
3. Data comes from central server
4. Concurrent use:
   1. Data is saved in real time
   2. Last change is retained
5. Safety:
   1. Encrypted communication
   2. Backups
   3. Error Messages
Interaction with Archie
Cochrane Author Support Tool (CAST) and more

Produce, write and maintain Cochrane reviews, using a range of intercommunicating tools.
Welcome to EPPI-Reviewer 4: software for systematic reviews

User Name:

Welcome to EPPI-Reviewer 4

You have successfully authenticated through Archie. However, your Archie Identity is not currently known to EPPI-Reviewer.

In order to work properly, EPPI-Reviewer needs to establish a link between an EPPI-Reviewer account and your Archie credentials. This can be done in two ways:

1. **Link an existing EPPI-Reviewer account to your Archie details.** Please choose this option if you already have an EPPI-Reviewer account.
   
   You will be asked to log on again, using your EPPI-Reviewer username and password. In case you don’t remember your EPPI-Reviewer details, you can retrieve your username and/or reset your password by clicking here.

2. **Create a new EPPI-Reviewer account.** Please choose this option only if you don’t already have an EPPI-Reviewer account.
   
   If you have an Expired account, please do not choose this option: an expired account will work best with option 1. Whichever your choice, you will need to successfully complete this process only once.

Please pick your route below:

- Link to an existing account: 1. Proceed > (Preferred)
- Create new account: 2. Proceed >

Read More...
1. Like in RevMan, you need to check it out.
2. Checked-in reviews are ReadOnly in EPPI-Reviewer.
3. Archie controls who can open the review.
4. No Other Data is Exchanged!
Machine learning / text mining for reducing workload during citation screening
1. Read title & abstract
2. Click include / exclude
3. Click ‘next’ and move on to the next reference
4. Repeat…
Screening prioritisation: Changing the distribution of studies

Traditional screening

Screening aided by text mining

Screening process (red = eligible study)
The result

• The result is an ordered list of titles and abstracts
• Those that are *most similar* to the ones already marked as ‘include’ are at the top
• The person screening continues to screen as usual, but behind the scenes the titles and abstracts remaining are re-ordered regularly (e.g. every 25 items)
Automatic classification

Does it work?
e.g. reviews from Cochrane Heart Group
Comparison of clinical vs public health

- Miwa M, Thomas J, O’Mara-Eves A, Ananiadou S (2014) Reducing the screening burden in systematic reviews through active learning on imbalanced data sets. *Journal of Biomedical Informatics*
Comparison: two reviews

‘Basic’ methods

“Micro nutrients”

With enhancements

“Cooking skills”
On the tedium of screening many excludes towards the end of the process: “this can be quite satisfying. By this stage of the screening process, you are well aware of what an include ‘looks like’, and can screen for exclusion very quickly. You can therefore screen through these remaining studies much more quickly than the earlier studies – and having them all coming later on does seem to make screening them quicker too.”

“I’ll just use my brain later”. It’s a technical process – doing all the screening – and got much more interesting once papers were being read.
Using the technology in live reviews: not all textbook graphs!
... and for updating existing reviews

Active learning:

Screening in EPPI-Reviewer
Citation screening in EPPI-Reviewer

The only effective and approved therapy for chronic hepatitis C is interferon-alpha. Because sustained response rates with interferon alone are disappointingly low, multidrug treatment regimes are currently being investigated. Ursodeoxycholic acid has been used in other chronic liver diseases and can limit hepatocyte injury. To evaluate the potential benefit of ursodeoxycholic acid in combination with interferon-alpha for the treatment of chronic hepatitis C, we conducted a prospective, double-blind, randomized, placebo-controlled trial comparing the combination therapy of interferon-alpha for the treatment of chronic hepatitis C. Thirty-one patients with chronic hepatitis C were randomized to receive 3 million units of interferon-alpha subcutaneously three times per week and either 13 to 15 mg/kg/day ursodeoxycholic acid or placebo orally for 6 months. The 6-month treatment period was followed by 6 months of observation. Biochemical normalization at the end of treatment occurred in 5 of 14 (36%) patients receiving monotherapy versus 8 of 15 (53%) patients (p = 0.34) receiving combination therapy. No patient treated with interferon...
Identifying RCTs automatically – coming soon
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Quality assessment / data extraction
Meta-analysis
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